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PATENTABLE PROCESSES.

THE law of patents is purely statutory. In this country the right of an inventor to a patent or grant, by which alone this species of property is created, depends entirely upon the provisions of the acts of Congress, passed pursuant to its constitutional power,¹ as interpreted by the decisions of the federal courts.²

Under this power Congress can grant a patent only to an inventor, and to him only for his own discovery and for a limited time; but, subject to these limitations, its power to legislate upon the subject of patents is plenary, and it may refuse all privileges whatsoever or bestow them for such classes of inventions and on such conditions as it may be pleased to prescribe.³

A process, by that name, never has been made the subject of a patent in any of our statutes. But every patent act has made provision for the grant of a patent to any one who has invented or discovered any new and useful "art," as well as "machine, manufacture, or composition of matter," or any new and useful improvement thereof; and a process, it is well settled, is included under the general term "useful art," or rather is an art, the two terms being practically synonymous.

As defined by Mr. Justice Bradley, speaking for the Supreme Court in the case of *Cochrane v. Deener*,⁴ "A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."

¹ Art. I. § 8, clause 8.

² *Brown v. Duchesne*, 19 How. (U. S.) 183, 195.

³ *Blanchard v. Sprague*, 3 Sumn. (U. S. C. C.) 535, 541; *McClurg v. Kingsland*, 1 How. (U. S.) 202, 206.

⁴ 94 U. S. 780, 788.

This definition was further elaborated by the same distinguished judge in *Tilghman v. Proctor*,¹ where, after reviewing several prior decisions, he quotes, from the opinion of Mr. Chief Justice Taney in the case of *O'Reilly v. Morse*,² the statement that "Whoever discovers that a certain useful result will be produced in any art by the use of certain means is entitled to a patent for it, provided he specifies the means," and declares that this clear and exact summary of the law affords the key to almost every case that can arise. "But," he explains, "everything turns on the force and meaning of the word 'means.' It is very certain that the means need not be a machine, or an apparatus; it may, as the court says, be a *process*. A machine is a thing. A process is an act, or a mode of acting. The one is visible to the eye,—an object of perpetual observation. The other is a conception of the mind, seen only by its effects when being executed or performed. Either may be the means of producing a useful result." It is only where apparatus is required and is not sufficiently obvious to suggest itself to a person skilled in the particular art, that the patentee of a process is required to describe some apparatus by which it can be practically carried out.³

In the Telephone Cases,⁴ which involved the patentability of Bell's claim for a method of, and apparatus for, transmitting vocal or other sounds telegraphically, "by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds," the court held, in an opinion written by Mr. Chief Justice Waite, that Bell had both discovered a new art and invented a machine by which it could be practiced and so made useful; and that the law unquestionably gave him the right to a patent therefor—as discoverer, for the art or process of transmitting speech he had found, and as inventor, for the means he had devised to make his discovery one of actual value. The court again observed that a patent for an art does not necessarily involve a

¹ 102 U. S. 707, 728. This case was decided by a unanimous court, after most careful consideration, and reversed a prior decision upon the same patent, in *Mitchell v. Tilghman*, 19 Wall. (U. S.) 287, where it was held, Justices Swayne, Strong, and Bradley dissenting, that the patent was limited to a process practiced by means of the particular apparatus pointed out in the specification, and, as so limited, had not been infringed.

² 15 How. (U. S.) 62.

³ Approved and applied in *New Process Fermentation Co. v. Maus*, 122 U. S. 413, 427.

⁴ 126 U. S. 1, 532.

patent for the particular means employed for using it, the mention of any means being necessary only to show that it can be made of use.

Of the processes involved in the above cases and therein held patentable as "arts," Bell's consisted in so using and controlling electricity, a force of nature, as to make it accomplish the purpose in view; Tilghman's process was of a chemical nature; and Cochran's was, apparently, a purely mechanical process.¹ Other process patents which came before the Supreme Court for adjudication, covering a wide range of arts, were either sustained,² or were held invalid on other grounds or not infringed,³ without any discussion or question of the patentability of the processes as such.⁴

Indeed, the language used by the court in defining the term "process," as quoted above, is broad enough to include all acts or modes of acting by which a given subject-matter is transformed into a different state or thing; and certainly the statute⁵ makes no distinction between different classes of processes, but declares "any" new and useful art — that is to say, process — patentable,

¹ "The hereinbefore described process for manufacturing flour from the meal of ground wheat, by first taking out the superfine flour, and then taking out the pulverulent impurities by subjection to the combined operations of screening and blowing and afterward regrinding and rebolting the purified middlings."

² *Mowry v. Whitney*, 14 Wall. (U. S.) 620; *Klein v. Russell*, 19 Wall. (U. S.) 433; *The Wood Paper Patent*, 23 Wall. (U. S.) 566; *Eames v. Andrews*, 122 U. S. 40; *Lawther v. Hamilton*, 124 U. S. 1; *Topliff v. Topliff*, 145 U. S. 156; *Hoyt v. Horne*, 145 U. S. 302.

³ *McClurg v. Kingsland*, 1 How. (U. S.) 202; *Brown v. Piper*, 91 U. S. 37; *Sewall v. Jones*, 91 U. S. 171; *Merrill v. Yeomans*, 94 U. S. 568; *Vinton v. Hamilton*, 104 U. S. 485; *Heald v. Rice*, 104 U. S. 737; *Packing Company Cases*, 105 U. S. 566; *Manning v. Glue Co.*, 108 U. S. 462; *Downton v. Milling Co.*, 108 U. S. 466; *Western Electric Co. v. Ansonia Brass & Copper Co.*, 114 U. S. 447; *Miller v. Foree*, 116 U. S. 22; *Plummer v. Sargent*, 120 U. S. 442; *Dreyfus v. Searle*, 124 U. S. 60; *Mosler Safe & Lock Co. v. Mosler*, 127 U. S. 354; *Bate Refrigerating Co. v. Hammond*, 129 U. S. 151; *Bene v. Jeantet*, 129 U. S. 683; *Marchand v. Emken*, 132 U. S. 195; *Commercial Mfg. Co. v. Fairbank Co.*, 135 U. S. 176; *International Tooth Crown Co. v. Gaylord*, 140 U. S. 55; *Ansonia Co. v. Electrical Supply Co.*, 144 U. S. 11; *Royer v. Coupe*, 146 U. S. 524; *Weatherhead v. Coupe*, 147 U. S. 322; *Lovell Mfg. Co. v. Cary*, 147 U. S. 623; *Leggett v. Standard Oil Co.*, 149 U. S. 287.

⁴ Attention should also be called to another line of cases in which patents originally granted for machines had been reissued with claims for processes and the reissues were held invalid on the ground that they covered different inventions from those of the original patents. See *Burr v. Duryee*, 1 Wall. (U. S.) 531; *Fuller v. Yentzer*, 94 U. S. 288, 299; *James v. Campbell*, 104 U. S. 356; *Heald v. Rice*, 104 U. S. 737; *Wing v. Anthony*, 106 U. S. 142; *Eachus v. Broomall*, 115 U. S. 429; *White v. Dunbar*, 119 U. S. 47.

⁵ Rev. Stats. § 4886.

provided, of course, it amounts to a discovery or involves an act of invention.

But, in 1895, in a unanimous opinion written by Mr. Justice Brown in the case of *Risdon Locomotive Works v. Medart*,¹ the court announced as an established rule of law the doctrine that while certain processes of manufacture were clearly patentable it was equally clear that certain others were not; and stated that, although the distinction between them was nowhere accurately defined, it might be said in general that processes which involved chemical or other similar elemental action were patentable, though mechanism might be necessary in their application or use, while those which consisted solely in the operation of a machine were not patentable, since such processes were purely mechanical and entirely independent of any chemical or other similar action.

Following this decision, the lower courts began at once to hold invalid patents for processes the patentability of which had never before been questioned.² The view that patentability had been denied to all merely mechanical processes was so widely entertained, and affected the validity of such a large class of process patents, that the court, again speaking by Mr. Justice Brown, seized upon the occasion shortly afterwards presented in the case of *Westinghouse v. Boyden Power Brake Co.*,³ to explain its prior decision by stating that, while it had there been assumed, although not expressly decided, that a process to be patentable must involve a chemical or other similar elemental action, it might still be regarded as an open question whether the patentability of processes extended beyond this class of inventions. And it added: "Where the process is simply the function or operative effect of a machine, the above cases are conclusive against its patentability; but where it is one which, though ordinarily and most successfully performed by machinery, may also be performed by simple manipulation, . . . there are cases to the effect that such a process is patentable, though none of the powers of nature be invoked to aid in producing the result."⁴

¹ 158 U. S. 68.

² See, for instance, *Travers v. American Cordage Co.*, 64 Fed. Rep. 771, and *Travers v. Hammock & Fly Net Co.*, 78 Fed. Rep. 638, the first decided before, and the second shortly after, the opinion in the *Locomotive Works Case* was handed down.

³ 170 U. S. 537, 556.

⁴ Citing *Eastern Paper Bag Co. v. Standard Paper Bag Co.*, 30 Fed. Rep. 63; *Union Paper Bag Mach. Co. v. Waterbury*, 39 Fed. Rep. 389; and *Travers v. American Cordage Co.*, 64 Fed. Rep. 771.

The uncertainty and confusion in which the whole subject of patentable processes is left by these two recent cases — and it has not been removed by any later decision of this court — is apparent. Does a given process involve a chemical or other similar elemental action, and what is to be included in this alternative term? What is meant by function or operative effect of a machine, and when is a process simply such a function or effect? And is, or is not, a process patentable where it does not invoke the aid of any power of nature, but can be performed by simple manipulation, although better performed by machinery? These are questions which will arise and must be answered — and the answers, as intimated by the court in the *Locomotive Works Case*, will necessarily be veiled in an obscurity similar to that which clouds the line of demarcation between mechanical skill and invention — if this doctrine, that only certain classes of processes, vaguely defined at best, are patentable, is, or is to become, the established rule in the law of patents.

The subject is of such practical importance, and the effect of any unnecessary confusion is so deplorable, as to justify a critical examination of the situation, to determine whether the doctrine is sound in principle, and, if not, to what extent the Supreme Court has bound its future action by its past decisions.

Every article of human contrivance, whether a machine, manufacture, or composition of matter, is the product and necessarily involves the practice of some process, — the performance of some act, or series of acts, by which the raw or partly manufactured products of nature are fashioned or united to make the article in question. Indeed, all natural products result from processes in which their elements coact, in accordance with natural laws, or are acted upon by the powers of nature.

A machine, itself an article of manufacture, is simply a means for performing the acts by which some other manufacture, whether another machine or the ultimate article designed for consumption, is produced.

In an abstract sense, therefore, the function of a machine may be said to be the production of the manufactured article for the making of which it was designed. More concretely, the function of every machine is to perform some definite process — some act, or series of acts — upon a material object, by which it is transformed into a different state or thing. It follows that this process is not simply the function of the machine. The two are entirely distinct

entities. The one, as stated by Mr. Justice Bradley in the *Tilghman Case*, "is a conception of the mind, seen only by its effects when being executed or performed." The other is the production of those physical effects upon a material object. For example, in the case of the simple process of making paper bags, the acts of folding first in one way and then another, which constitute the process, can easily be conceived, wholly apart from the piece of paper to be acted upon; but the function or operative effect of a paper bag machine can be realized only when the paper is actually subjected to the action of the machine. In this case, moreover, it is apparent that the process is something different from, and more than, the function of the machine, because it can also be performed without the aid of any machine. It is only where a process can be performed in no other known way than by a particular machine that difficulty is experienced in distinguishing between it and the function of the machine. But the distinction is none the less real. "The difficulty," as pointed out by Professor Robinson,¹ "is another form of the old confusion between the end and the means, and is to be avoided by defining sharply the end to be accomplished, and determining whether the machine or the operation performed by it is the actual means." The acts which constitute the process are, primarily, the means for attaining the end in view. The machine, as already stated, is simply a means for performing the process; and that is its function or operative effect. It is always possible that a different machine, or other means, may be devised for performing this operation. Thus, Bell's method of transmitting vocal sounds telegraphically is not simply the function of the crude apparatus by which he reduced his process to practice.

In the natural course of development, many processes of manufacture are first performed by hand, then partly by machinery and partly by hand, and, finally, automatically, by a machine. For others, machines have not yet been devised; and such processes must be performed wholly or in part by hand. Still other processes are beyond the power or skill of the hand, and must be performed, if at all, by a machine. But, however carried into effect, the process is still a process; and it matters not whether it was first practiced by hand, or was discovered and reduced to practice only in connection with the development of a machine. It does not cease to be such because it is, or must be, performed

¹ 1 Robinson on Patents, § 172, note 2; see, also, §§ 144-146, 167.

by mechanical means. Even when a process seems inseparably identified with a particular machine, as the only known means by which it can be carried into effect, its inventor is entitled to a patent for the process as well as for the machine; and it is only by such a patent that his whole invention is secured to him against all possible contingencies.¹

The useful arts are no less promoted by the inventor who discovers a simple manipulative process than by one who discovers a new chemical process. Congress, therefore, has the same constitutional power to secure his discovery, for a limited time, to the one inventor as to the other; and in the exercise of this power, as already stated, it has never made any distinction between mechanical and other processes. The provision of the Patent Act is broad enough to cover all processes alike, the only qualifications being that the process shall have been invented or discovered, and be new and useful.

With these preliminary observations we will pass to the consideration of the basis for, and the limitations of, the doctrine, which

¹ Curtis, *Law of Patents*, 4th ed. § 14, note. — "A process may be altogether new, whether the machinery by which it is carried on be new or old. A new process may be invented or discovered, which may require the use of a newly invented machine. In such case, if both the process and the machine were invented by the same person, he could take separate patents for them. A new process may be carried on by the use of an old machine, in a mode in which it was never used before. . . . In such a case, the patentability of the process in no degree depends upon the characteristic principle of the machine, although machinery is essential to the process, and although a particular machine may be required."

1 Robinson on Patents, § 172, note 2. — "If the operation performed by the machine is new in reference to the object upon which it is employed, a new process has been invented; and this is no less true if the machine or instrument employed is new than if it were old, or if the process can be performed in no other known way than by this particular machine. While, on the other hand, if the operation is known in reference to the object, the invention of a new machine for performing it does not make a new process, but only a new instrument for applying it. . . . Whether or not a new machine is the reduction to practice of a new process, or is a new instrument for the performance of an old process, is, therefore, to be determined by the state of the art at the date of the invention. If it is the former, the process is patentable, though the machine be new. If the latter, only the machine can be allowed the protection of the law."

Tilghman v. Proctor, 102 U. S. 707, 721. — "Had the process been known and used before, and not been Tilghman's invention, he could not then have claimed anything more than the particular apparatus described in his patent; but being the inventor of the process, as we are satisfied was the fact, he was entitled to claim it in the manner he did."

See *Providence Rubber Co. v. Goodyear*, 9 Wall. (U. S.) 788, 796.

has been declared to be an established rule of law, that certain processes are not proper subject-matter for a patent.

Wyeth v. Stone,¹ decided by Mr. Justice Story in 1840, is the first case cited in support of this proposition, and is said to show the distinction between patentable and unpatentable processes, and to be the earliest reported case upon that subject. In the patent in suit, the inventor, after describing a horse-machine for cutting ice and its mode of operation, had claimed, as new, the process of cutting ice "of a uniform size, by means of an apparatus worked by any other power than human." This was held to be "a claim for an art or principle in the abstract, and not for any particular method or machinery," and to be "broader than the actual invention of the patentee." But another claim in the specification for the particular apparatus to cut ice, described therein, was sustained as valid. It is difficult to see the bearing of this decision upon the patentability of processes. The question whether the specific acts performed in the operation of Wyeth's machine were patentable as a process, if new, is not even referred to. All that appears to have been decided was, that a patentee could not go beyond his actual invention and have a valid claim for an art or principle in the abstract.

O'Reilly v. Morse,² decided by the Supreme Court in 1853, is to the same effect. After describing and claiming the several parts of his apparatus, Morse made claim, broadly, to "the use of the motive power of the electric or galvanic current . . . however developed, for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power," of which he asserted that he was the first inventor or discoverer. Morse had unquestionably discovered a new process, which might be described as the method of transmitting intelligence to a distance by causing the making and breaking of an electric circuit at one point to produce certain conventional signs at a distant point. But instead of claiming such a process, he made his claim to an art or principle in the abstract—to the use of a power of nature to perform an abstract function or effect an abstract result, regardless of the particular process or apparatus employed; and the court held, correctly, that his claim was "too broad, and not warranted by law," citing

¹ 1 Story (U. S. C. C.) 273, 285.

² 15 How. (U. S.) 62, 112, 117, 119. For a somewhat similar case, where the patentee had failed to claim the process he had invented, see *Le Roy v. Tatham*, 14 How. (U. S.) 156; and *s. c.*, 22 How. (U. S.) 132.

Wyeth *v.* Stone as a case directly in point. Mr. Chief Justice Taney, writing the opinion, points out that, whether the telegraph be regarded as an art or machine, "the manner and process of making or using it must be set forth in exact terms," the act of Congress making no difference in this respect between an art and a machine, and thus, as had always been held, the patent embraced nothing more than the actual improvement described and claimed as new, any one being at liberty to use all methods of accomplishing the same object which differed substantially from the one described.

Corning *v.* Burden,¹ also decided in 1853, is, however, the case principally relied upon, and is the only one of its own decisions cited by the Supreme Court, in the Locomotive Works Case, in support of its position.² The case turned upon the proper construction of the claim of the patent in suit. The declaration averred that the patentee was "the first inventor of a new and useful machine for rolling puddle balls," for which a patent was granted in 1840, and that the defendants had "made, used, &c., this said new and useful machine." The patent itself was entitled, and its specification described, "a new and useful machine for rolling puddle balls and other masses of iron in the manufacture of iron"; but the claim, in rather ambiguous language, was for "the preparing of the puddle balls . . . by causing them to pass between a revolving cylinder and a curved segmental trough adapted thereto, constructed and operating substantially in the manner of that herein described and represented." The court below construed the patent as for a new process and so instructed the jury, who returned a verdict for the plaintiff. On exception to this charge the Supreme Court reversed the judgment and awarded a new trial.³ Mr. Justice Grier, who wrote the opinion, after reciting the facts, introduces an inquiry as to whether the patent was for a process or a machine by the following general statement:

¹ 15 How. (U. S.) 252, 267.

² *Wicke v. Ostrum*, 103 U. S. 461, 469, is also cited, to the same effect, in the Westinghouse Case; but in that case it was held, simply, that while the patentee could not patent "the idea of driving more than one nail at the same time in the manufacture of boxes by the use of machinery," he could claim, as his patent merely did, his contrivance to make that idea practically useful.

³ For other cases in which ambiguous claims have been construed as claims for machines, not processes, see *Burr v. Duryee*, 1 Wall. (U. S.) 531; *Railroad Co. v. Du Bois*, 12 Wall. (U. S.) 47; *Fuller v. Yewtzer*, 94 U. S. 288, 299; *Grier v. Wilt*, 120 U. S. 412; *Dryfoos v. Wiese*, 124 U. S. 32; *Crescent Brewing Co. v. Gottfried*, 128 U. S. 158; *Grant v. Walter*, 148 U. S. 547.

"A process, *eo nomine*, is not made the subject of a patent in our act of Congress. It is included under the general term 'useful art.' An art may require one or more processes or machines in order to produce a certain result or manufacture. The term machine includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations, are called processes. . . . One may discover a new and useful improvement in the process of tanning, dyeing, &c., irrespective of any particular form of machinery or mechanical device. And another may invent a labor-saving machine by which this operation or process may be performed, and each may be entitled to his patent. . . . It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations. But the term process is often used in a more vague sense, in which it cannot be the subject of a patent. Thus we say that a board is undergoing the process of being planed, grain of being ground, iron of being hammered, or rolled. Here the term is used subjectively or passively as applied to the material operated on, and not to the method or mode of producing that operation, which is by mechanical means, or the use of a machine, as distinguished from a process. In this use of the term it represents the function of a machine, or the effect produced by it on the material subjected to the action of the machine. But it is well settled that a man cannot have a patent for the function or abstract effect of a machine, but only for the machine which produces it."

Coming then to the case in hand, the learned judge holds that it was by not distinguishing between the primary and secondary sense of the term process, that the court below appeared to have fallen into an error. Burden, he says, did not pretend to have discovered any new process, but only a new machine; and as the patent requested was for a machine, to construe its claim as for the function or effect of that machine would certainly endanger, if not destroy, its validity.

The case, therefore, decided only that the patent must be regarded as a patent for a machine, and that the court below erred in construing it otherwise. It did not call for a decision of, and the attention of the court does not appear to have been directed specifically to, the question of the patentability of a new process

which was purely mechanical and could, perhaps, be performed only by the operation of a machine. And, notwithstanding the fact that some of the expressions used by way of illustration may be given a broader signification, it is believed that the court intended to condemn, as unpatentable, only abstractions — “the function or abstract effect of a machine,” and consequently a process in the “secondary,” “vague,” or “subjective” sense in which that term is sometimes used to represent such abstract function or effect — as distinguished from a process in the primary and only correct sense in which that term was, and has since been, defined as synonymous with an “art”;¹ and the decision seems to have been so understood by the court itself down to the time of the Locomotive Works Case.²

Coming now to *Risdon Locomotive Works v. Medart*,³ we find that the case is based upon a patent — among others — which is, admittedly, “for a process in manufacture, and not for the mecha-

¹ In *Burr v. Duryee*, 1 Wall. (U. S.) 531, 570, decided ten years later, Mr. Justice Grier observes that the patent act does not authorize the grant of a patent “for a ‘principle’ or a ‘mode of operation,’ or an idea, or any other abstraction.” See, also, *Case v. Brown*, 2 Wall. (U. S.) 320.

² The remaining cases cited in the Locomotive Works Case to illustrate processes which are unpatentable are all comparatively recent decisions of the Circuit Courts, and are referred to as follows: “Although the cases are not numerous, this distinction between a process and a function has never been departed from by this court, and has been accepted and applied in a large number of cases in the Circuit Courts. The following processes have been held not to be patentable: An improvement in sewing machines, by which the soles and uppers of boots and shoes could be sewed together without any welt by a certain kind of stitches, *McKay v. Jackman*, 12 Fed. Rep. 615. A process for washing shavings in breweries, *Brainard v. Cramme*, 12 Fed. Rep. 621. For an improved method of treating seed by steam, *Gage v. Kellogg*, 23 Fed. Rep. 891. A process for crimping heel stiffenings of boots and shoes, *Hatch v. Moffitt*, 15 Fed. Rep. 252. See also *Sickles v. Falls Company*, 4 Blatchf. (U. S.) 508; *Excelsior Needle Co. v. Union Needle Co.*, 32 Fed. Rep. 221.” It will be found, however, that every one of these cases was actually decided upon some ground other than the unpatentability of the process. Thus, in *McKay v. Jackman*, it was held that the patentee had invented no new process for forming stitches, but simply had applied an old stitch to a new part of a shoe, and that an earlier patent for the machine covered his whole invention, — in other words, that the process claimed had not been invented by the patentee. *Brainard v. Cramme* and *Hatch v. Moffitt* were decided upon the ground that broad process claims, introduced by reissue into patents for machines years after the original patents had been issued, were void within the decisions relative to reissued patents. And in *Gage v. Herring*, which was also based upon a reissued patent, it was held that this reissue was invalid as being an unlawful expansion of the original patent, or, in any event, had not been infringed. The other two cases to which reference is made are even more remote in their bearing upon the subject in question.

³ 158 U. S. 68.

nism employed, nor for the finished product of such manufacture." In going back to a decision handed down more than forty years before and from expressions of opinion found therein deducing a rule that certain classes of processes are not patentable and applying that rule as it has done, it is thought with all deference that the court itself has fallen into the same error—a failure to distinguish between the primary and secondary meaning of the term process—which, in *Corning v. Burden*, it found to have been made by the lower court. Thus, in the opinion, the general proposition, "That certain processes of manufacture are patentable is as clear as that certain others are not," is first announced; and this is explained by the further statement that, generally speaking, "processes of manufacture which involve chemical or other similar elemental action are patentable, though mechanism may be necessary in the application or carrying out of such processes, while those which consist solely in the operation of a machine are not," the operation then being "purely mechanical." Next, after reviewing two English cases and its own decisions in *O'Reilly v. Morse*, *Mowry v. Whitney*, *Cochrane v. Deener*, *Tilghman v. Proctor*, *New Process Fermentation Co. v. Maus*, and the Telephone Cases, and observing that, in all these cases, the process sustained was either a chemical one, or consisted in the use of one of the agencies of nature for a practical purpose, it prefaces its reference to *Wyeth v. Stone* and *Corning v. Burden* by the statement that "It is equally clear, however, that a valid patent cannot be obtained for a process which involves nothing more than the operation of a piece of mechanism, or, in other words, for the function of a machine." And, finally, it states that "this distinction between a process and a function has never been departed from by this court."

The argument, reduced to the form of a syllogism, appears to be this: A function, as always distinguished from a process, is not patentable. Some processes, however, are simply the functions of machines. Therefore, while certain processes are clearly patentable, certain others are not.

Admittedly, the function of a machine is not patentable. It is neither an art, nor a machine, nor either of the other subjects of a patent named in the statute. Like a principle, an idea, or an effect or result, it is a mere abstraction, possessing none of the attributes of an invention.¹ What is conceived to be a fallacy

¹ 1 Robinson on Patents, §§ 133-150.

in the reasoning of the court lies in the minor premise. That a process is, or may be, simply the function of a machine, is true only in the secondary sense of that term, — in other words, the process, so called, is no process at all. As already pointed out, a true process is distinct from the function of the machine, even where it can be carried out only by the operation of that machine; and no case has been cited in which such a process, when found to be new, was held to be unpatentable. In its intermediate proposition, therefore, the court seems to have used the term process, in its primary sense, as synonymous with the term in its secondary sense; which is shown by the fact that its conclusion, that certain processes — those, in general, which involve nothing more than the operation of a piece of machinery — are unpatentable, is made to apply to a process which, as stated, is admitted to be "a process in manufacture."

The patent in suit, after stating that the machinery which had been described for carrying out the invention was not claimed therein, since it was the inventor's intention to secure that by applications thereafter to be filed, concludes with four claims, of which the third, illustrative of all, is as follows: "The herein-described improvement in the art of manufacturing belt-pulleys, which consists in centering the pulley center or spider, boring the hub thereof, grinding the center or spider concentric with the axis of the pulley, securing the rim thereto, grinding the face of the rim concentric with the axis of the pulley, and then grinding or squaring the edges of the rim, substantially as described."

Here the invention is clearly stated in terms of an art, and not in terms of a function; and in this respect the patent differs essentially from that of Burden. The process, like Cochrane's process of manufacturing flour, "requires that certain things should be done with certain substances, and in a certain order; but the tools to be used may be of secondary consequence." Instead of being identified with the operation or function of the particular machine described, it can evidently be practiced by any one who has an ordinary foot-lathe and a tool for grinding. It is true that it is purely mechanical; but in this respect also the process does not differ from that of Cochrane — except, perhaps, that what might be called an elemental action, but was really nothing more than the mechanical action of air set in motion by purely mechanical means, was involved in the "blowing" step of the latter process.

It does not follow, however, that the patent should have been sustained. On the contrary, the decision that the patent was invalid is undoubtedly correct, because it appears that the process, apart from the machinery devised to carry it out, was not new ; and herein lies, it is thought, the real, and only real, distinction between this patent and that sustained as valid in *Cochrane v. Deener*. Every step specified in the claims was old and commonplace, and the court finds, as a matter of fact, that the patentee had invented nothing more than a new machine for carrying out an old process.

Had the court rested its decision upon this single fact, it would have stood upon firm ground. Instead, by applying to a process an old *dictum* respecting an abstraction and, as the result, by denying patentability to a vaguely defined class of true processes, it has taken what is conceived to be a long step backwards from the position reached and so clearly defined in *Cochrane v. Deener* and *Tilghman v. Proctor*.

What is said upon this subject, in the later *Westinghouse Case*, is admittedly *obiter dictum*. The decision there turned on the construction of a claim for a combination of mechanical elements in an air-brake, one of which was defined in terms of the function which it was designed to perform. Applying the rule that a function is not patentable, the court correctly held that this claim, to be valid, must be limited to the means shown and described for performing the function, or to its mechanical equivalent, and decided, by a bare majority, that it was not entitled to a range of equivalents broad enough to cover the defendant's brake and, therefore, was not infringed. It specifically declined to express an opinion upon the question whether the function of admitting air directly from the train-pipe to the brake-cylinder could have been patented as an independent process, since no such claim had been made. By citing, however, the case in which the hammock weaving process was sustained, rather than the later case¹ in which another circuit judge felt constrained by what he regarded as the rule laid down in the *Locomotive Works Case* to hold the same process unpatentable, it may, perhaps, fairly be inferred that the court was inclined to consider favorably the patentability of those processes which, although purely mechanical and ordinarily and most successfully performed by machinery, may also be performed

¹ *Travers v. Hammock & Fly Net Co.*, 78 Fed. Rep. 638.

by simple manipulation,—a question which it states was not concluded by the decision in the Locomotive Works Case.

It is important to note that, in a dissenting opinion filed in the Westinghouse Case, Mr. Justice Shiras, with the concurrence of Mr. Justice Brewer, states¹ that no reason is given in the authorities, and he can think of none in the nature of things, why a new process or method may not be patentable, even though a mechanical device or combination may be necessary to render it practicable, the term process seemingly being “used by the courts as descriptive of an invention which, from its novelty and priority in the art to which it belongs, is not to be construed as inhering only in the particular means described, in the letters patent, as sufficient to exemplify the invention and bring it into practical use.” Here we have a statement of what is thought to be the true principle upon which the patentability of a process depends; and it shows, further, that at least two of the judges who participated in the decision in the Locomotive Works Case concurred in that decision, not for the reasons stated in the opinion therein, but because the invention was there found to inhere only in the machine described, the process itself being old.

Three other cases involving process claims have been decided by the Supreme Court since the Westinghouse Case. The process was held void, for want of novelty, in one,² and was sustained in another;³ but both of these processes involved the element of heat and probably some chemical action as well, and the subject of their patentability as processes was not discussed. The remaining case, however, requires consideration.

In *Busch v. Jones*,⁴ the patent contained four claims covering the mechanical elements of a press used for removing from printed sheets the indentations formed by the type in printing, and a fifth claim for the process of treating the printed sheets, by “subjecting a collection of such sheets to pressure without the use of fuller-boards, and while under such pressure tying them into a compact bundle with end boards, then removing them immediately from the press, and allowing them to remain tied sufficiently long to fix and complete dry pressing.” This dry pressing, as it is called, had previously been done by placing a pile of printed sheets in a press

¹ 170 U. S. 537, 574.

² *United States Repair & Guarantee Co. v. Assyrian Asphalt Co.*, 183 U. S. 591.

³ *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U. S. 403.

⁴ 184 U. S. 598.

and leaving them there, under pressure, until they had become sufficiently dry to remain smooth and flat. The patented method, by allowing the removal from the press of the bundle of sheets as soon as tied, effected a great economy in the number of presses required to do a given amount of work in a given time.

Comparing the patented press with a device for pressing and tying paper into bundles described in a prior patent, the court concludes that though in each the pressure first applied by the machine was retained by cords and continued in the bundle, yet its purpose in the Jones patent was to remove type indentations from the sheets, and in the prior patent to retain the sheets in the bundle, and therefore invention might be ascribed to the Jones patent if confined to the press proper. But the process claim, it is said, must be viewed from a different standpoint. And, premising the inquiry with a statement that it is entirely independent of questions as to what constitutes a patentable process discussed in the *Locomotive Works* and *Westinghouse Cases*, the conclusion is reached that the force at work in the process — both the pressure begun in the press and its continuance in the bundle by means of strings and cords — is entirely due to the press, and that, therefore, the process described is nothing but “the operation and effect of the machine.” Accordingly, the four claims for the press were sustained, and the process claim was held invalid.

Here, again, the process claimed was not new. The steps are precisely the same as those which were performed in the use of the old Dingham paper press — they are merely practiced upon printed sheets of paper, instead of plain sheets, though for a different purpose. The question of its patentability, therefore, would seem to depend solely upon whether the new use to which the process had been applied was so analogous to the old as to amount merely to a double use, or was so remote that the perception that the old process could be used for this new purpose involved an act of invention.¹ This, of course, is a question of fact, upon which opinions may well differ. On the other hand, it seems impossible to question the patentable character of the process. Pressure is always an effect, and may also be a cause; and here it is both. As a cause, or force, it is used to effect the removal of the type indentations, which is the ultimate end in view. It is the effect of whatever force is employed to produce it. When this pressure is

¹ *Potts v. Creager*, 155 U. S. 597, 608; *Hobbs v. Beach*, 180 U. S. 383, 392.

applied to the bundle of printed sheets by means of a particular press, it may then be said to be effected by "the operation," and be "the natural and direct effect," of that machine; but it may be applied by other means, — for instance, by a weight, or a simple lever. While the patent describes a press designed especially for this work, the process claimed is not limited in this respect, but consists in the doing of certain things to certain substances and in a certain order, without reference to the mechanical means to be employed therefor. The process, moreover, apparently involves elemental, as well as mechanical, action, since it is heat — presumably that of the atmosphere — which dries and so fixes the sheets.

What is the ground upon which the court rests its decision that this fifth claim is void? Were it not for the express disclaimer, it certainly would seem to be upon the ground stated in the Locomotive Works Case. Why, else, all the discussion about the operation and effect of the press? On the whole, however, it is probably the lack of patentable novelty in the process. The statement of the court that the different purpose in view neither added anything to the operation of the Jones press nor detracted anything from the operation of the Dingham press is, in effect, a finding that the processes performed in the operation of the two presses are identical; and the further finding that, notwithstanding this fact, invention may be ascribed to the Jones patent, "if it be confined to the press proper," may be taken as a denial of invention in the process. *Inclusio unius est exclusio alterius*. Except as it may possibly indicate a want of confidence in the reasoning in the Locomotive Works Case, the opinion in this case does not remove any of the confusion created by that decision.¹

¹ Since the case of *Risdon Locomotive Works v. Medart*, a number of process patents have been adjudicated in the Circuit Courts. *Travers v. Hammock & Fly Net Co.*, 78 Fed. Rep. 638; *Gindorff v. Deering*, 81 Fed. Rep. 952; *Pratt v. Thompson & Taylor Spice Co.*, 83 Fed. Rep. 516; *Amer. Strawboard Co. v. Elkhart Egg-Case Co.*, 84 Fed. Rep. 960; *Stokes Bros. Mfg. Co. v. Heller*, 96 Fed. Rep. 104; *Dodge Mfg. Co. v. Ohio Valley Pulley Works*, 101 Fed. Rep. 584; *Fabric Coloring Co. v. Alexander Smith & Son's Carpet Co.*, 109 Fed. Rep. 328; *Ballou v. Potter*, 110 Fed. Rep. 969; *Cleveland Foundry Co. v. Detroit Vapor Stove Co.*, 131 Fed. Rep. 740; *Manhattan General Const. Co. v. Helios-Upton Co.*, 135 Fed. Rep. 785; *Blakesley Novelty Co. v. Connecticut Web Co.*, 78 Fed. Rep. 480; *Simonds Rolling-Mach. Co. v. Hathorn Mfg. Co.*, 90 Fed. Rep. 201 (affirmed, 93 Fed. Rep. 958); *Melvin v. Thos. Potter, Sons & Co.*, 91 Fed. Rep. 151; *Westinghouse Elec. & Mfg. Co. v. Catskill Illum. & Power Co.*, 94 Fed. Rep. 868; *Chisholm v. Johnson*, 106 Fed. Rep. 191 (see, also, 115 Fed. Rep. 625); *Diamond Stone Sawing Mach. Co. v. Dean*, 111 Fed. Rep. 380; *Schlicht Heat, Light & Power Co. v. Aeolipyle Co.*, 117 Fed. Rep. 299; *Peters v.*

The situation, then, as it stands to-day, is as follows:

The Revised Statutes provide¹ that the inventor or discoverer of any new and useful art, or any new and useful improvements thereof, may obtain a patent therefor upon due proceedings had in compliance with the regulations prescribed.

A process—understanding the term, in its proper sense, as an act, or a series of acts, by means of which some physical change is produced in a material object—is an art, within the meaning of the statute, and as such is just as patentable as is a machine; provided (a qualification nowhere found in the statutes) it involves a chemical or other similar elemental action, such, for instance, as the action of electricity, heat, or, apparently, air mechanically set in motion. Of this there can be no question.

When a process which does not invoke any power of nature to aid in effecting the desired result may be performed by simple manipulation, although ordinarily and most successfully performed by machinery, it certainly ought to be patentable. There is no reason in the nature of things why it should not be; and to hold that it is not would surely seem to nullify, in part, the will of Congress as expressed in its duly authorized acts. Indeed, the patentability of such processes might be regarded as established by three cases,²

Union Biscuit Co., 120 Fed. Rep. 679 (see, also, 125 Fed. Rep. 601); *Kirchberger v. Amer. Acetylene Burner Co.*, 124 Fed. Rep. 764 (affirmed, 128 Fed. Rep. 599); *Chisholm v. Flemming*, 133 Fed. Rep. 924. There are also a number of decisions in the Circuit Courts of Appeals. *Wells Glass Co. v. Henderson*, 67 Fed. Rep. 930; *Amer. Fibre-Chamois Co. v. Buckskin-Fibre Co.*, 72 Fed. Rep. 508; *Phil. Creamery Supply Co. v. Davis & Rankin Bdg. & Mfg. Co.*, 84 Fed. Rep. 881; *Chicago Sugar-Refining Co. v. Charles Pope Glucose Co.*, 84 Fed. Rep. 977; *Streator Cathedral Glass Co. v. Wire-Glass Co.*, 97 Fed. Rep. 950; *Chinnock v. Paterson, P. & S. Tel. Co.*, 112 Fed. Rep. 531; *Dayton Fan & Motor Co. v. Westinghouse Elec. & Mfg. Co.*, 118 Fed. Rep. 562; *Westinghouse Elec. & Mfg. Co. v. Stanley Instrument Co.*, 133 Fed. Rep. 167; *Kahn v. Starrells*, 135 Fed. Rep. 532. The subject has also been carefully considered by the Court of Appeals for the District of Columbia in two cases appealed from the Patent Office. *In re Weston*, 17 App. D. C. 431; *In re Cunningham*, 21 App. D. C. 28. And by the Commissioner of Patents. *Ex parte Creveling*, 111 O. G. 2489.

It may be stated that since the decision in the *Westinghouse Case* was handed down, the lower courts very generally have sustained patents for that class of processes the patentability of which was there left as an open question, while they quite uniformly have held unpatentable, as the mere function of a machine, those processes which apparently were identified with the operation of a machine, either because the steps of the process were, by express limitation, to be performed by means of a particular mechanical element or combination, or because the process could be performed in no other known way than by a machine.

¹ § 4886.

² In *Eames v. Andrews*, 122 U. S. 40, the claim sustained was for "the process of constructing wells by driving or forcing an instrument into the ground until it is pro-

in which claims for processes apparently belonging to this class were sustained, were it not for the doubt raised by *Risdon Locomotive Works v. Medart* and the later statement, in *Westinghouse v. Boyden Air Brake Co.*, that the question is still to be regarded as open. It may confidently be expected, however, that, when a case presents itself, the Supreme Court will hold, as it certainly seemed to intimate in the *Westinghouse Case* and as the lower courts have since held quite generally, that a process of this class is the proper subject for a patent.

The further proposition, that where a process is simply the function or operative effect of a machine the authorities are conclusive against its patentability, is correct only when properly understood. If the term process is taken in the secondary or subjective sense defined in *Corning v. Burden*, as representing merely, or as synonymous with, the function of, or the effect produced by, a machine, then indeed the proposition is conclusively established, both by the authorities and as a matter of principle. In this case, however, the process is not a process at all, but simply an abstraction, and for that reason unpatentable. If it means that a process, or art, is not patentable where it is new only in the sense that it is performed, better perhaps than before, by the operation and as the function of a newly invented machine, then it coincides with the facts of, and is established by, *Risdon Locomotive Works v. Medart*. In that case the process was not patentable because it was old and the whole invention inhered in, and was limited to, the particular means devised for carrying it out, as was apparently the *ratio decidendi* in *Busch v. Jones*. But this is as far as the court has yet gone. If the proposition means anything more — if, for instance, it means that a true process is not patentable, although altogether new, where it is seemingly identified with the function

jected into the water without removing the earth upward, as it is in boring, substantially as herein described."

In *Topliff v. Topliff*, 145 U. S. 156, the patent contained two claims, both of which were sustained, the first being for "the herein-described method of equalizing the action of springs of vehicles and distributing the weight of the load," namely, by "connecting together by a rigid rod the two pivoted links upon the clips employed on the hind axle."

And in *Hoyt v. Horne*, 145 U. S. 302, the claim on which a decree for the complainant was directed was as follows: "The improvement in beating rags to pulp in a rag engine having a beater-roll and bed-plate knives, consisting in circulating the fibrous material and liquid in vertical planes, drawing the same between the knives at the bottom of the vat, carrying it around and over the roll and delivering it into the upper section of the vat, substantially as described."

or operative effect of a machine because it can be performed in no other known way than by that particular machine — it not only does not find support in any actual decision of the Supreme Court, but is unsound in principle.

As stated in *Risdon Locomotive Works v. Medart*, the proposition is, at best, misleading. It was not properly applicable to that case, which could, and should, have been decided upon other grounds; and two of the justices who participated in that decision have since made it clear that they do not agree with the reasoning on which the decision is made to rest. Perhaps there were others. It is earnestly to be hoped, not only that the court will not extend the doctrine beyond the facts of that case, but will, as it alone can do, remove all the confusion which has resulted therefrom by reaffirming the broad principles of law governing the patentability of processes, so clearly set forth by Mr. Justice Bradley, and by placing the invalidity of patents for processes which are in fact old distinctly upon the correct statutory ground.

The patentability of a process should, under our laws, be determined solely by ascertaining whether such process, as distinguished from the means by which it is to be performed, is new and useful, and amounts to an invention or discovery. If it meets this test successfully, the process fulfills every requirement, and is the proper subject of a patent.

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